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ABSTRACT

Drawing from data generated in more than 100 hours of interaction within 15 leaderless groups, a study investigated the interaction characteristics of emergent leadership--leadership that is earned through face-to-face encounters in a group. Each group was instructed to reach consensus decisions on two tasks, both of which provided the possibility that leadership could emerge and change. Members' self-report data were used to identify leaders, with each member rating every other member on a continuum of status from "clearly a leader" to "clearly a nonleader." "Emergent leader" was operationalized as that group member identified as "clearly a leader" by all members (or all but one) during the final group meeting. Results, coded using the Social Information Processing system, indicated that leader interaction tends to be distinctive from the overall group interaction. Leaders tend to distribute this interaction across a wider variety of dyadic partners, communicative functions, and developmental stages of group history than do nonleaders. Leader interaction appeared to be characterized by structured sequential interaction; however, no specific forms of interaction characterized leader participation. References and nine data tables are appended. (FL)

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INTERACTION CHARACTERISTICS OF EMERGENT LEADERSHIP

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Abstract

INTERACTION CHARACTERISTICS OF
EMERGENT LEADERSHIP

This study describes the empirically discovered interaction characteristics of emergent leadership. The data base of this study is more than 100 hours of interaction which occurred over extended group history in 15 leaderless discussion groups. This interaction was coded into the categories of two interaction analysis systems resulting in 250,655 separate codes available for analysis. Stochastic probability (i.e., Markov) analysis was applied and the interaction of leaders and nonleaders was compared.

The results of this study suggest leader interaction tends to be idiosyncratic (i.e., distinctive from the overall group interaction). Leaders tend to distribute this interaction across a wider variety of dyadic partners, communicative functions and developmental stages of group history than do nonleaders. Leader interaction appears to be characterized by structured sequential interaction, however, no specific forms of interacts characterize leader participation. Rather, leader interaction tends to be characterized by complexity---variety, diversity and distinctiveness.

Recently many leadership scholars have lamented the state of the art. Melcher (1977), for example wrote, "The study of leadership in the last 70 years has resulted in little accumulated knowledge that permits one to understand or predict the effects of leadership approaches or that provides a better understanding of how to be an effective leader" (p. 94). Lombardo and McCall (1978) issued a challenge to researchers to rediscover the leadership phenomenon by casting aside old notions and exploring the previously unexplored:

> Leadership in its present sense is a myth designed to simplify events and their causation, and the myths of leadership should be separated from the analysis of leadership as a process of social influence involving innumerable organizational and environmental demands (pp. 9-10).

Departing from traditional assumptions, some theorists suggest a grand theory of leadership may not be possible (e.g., see Greene, 1977, pp. 57-67). They advise researchers to document meaningful varieties of leadership rather than assume leadership is a uniform phenomenon. For example, leadership at a distance, face-to-face leadership, management and supervision may be quite disparate phenomena (e.g., see Dubin, 1979, pp. 225-238; Hunt, Sekaran & Schriesheim, 1982, pp. 1-6; Lord, Foti & Phillips, 1982, pp. 117-121; Pondy, 1978, pp. 88-91).

Ellis' (1979, p. 163) serendipitous finding regarding face-to-face leadership suggests a fruitful direction for leadership research. While comparing the relational characteristics of two group systems Ellis discovered that nonleaders tended to interact similarly with other nonleaders, but leaders tended to interact differently with a variety of group members. This description is consistent with Weick's (1978, pp. 37-61) description of the "leader as medium."

The primary task of a group is, of course, information processing. Weick's leader as medium metaphor suggests leadership accomplishes a crucial function during this processing. A leader, in concert with other group members, is engaged in registering and acting on information. The function of the interaction in which the leader-as-medium engages is distinguished from the function of nonleaders' interaction in the sense that the interaction of the leader demonstrates qualities analogous to a "good" medium. The crucial medium quality is complexity---variety, diversity, distinctiveness.

The metaphor assumes group information processing (comprising a great variety of information sources, ways to state information, interpretations, rules, etc.) is extremely equivocal. Equivocality of social information must be reduced to manageable levels for the group to accomplish its task. The "law of requisite variety" suggests only variety can regulate variety (Ashby, 1968, p. 135). More specifically, Weick (1979) explains, "Order consists of data in which equivocality has been suppressed, but equivolcality can be suppressed only after processes have first registered that equivocality" (p. 189). Consequently, to reduce informational equivocality, the group must first register the amount of that equivocality accurately.

A good medium possesses characteristics which accurately register equivocality. Three properties which facilitate accurate registration of equivocality are associated with a good medium: (1) many elements, (2) independence of elements, and (3) weak internal constraints. To clarify the metaphor Weick (1978, pp. 37-40) compares the leader-as-medium to a contour guage. The contour guage is composed of many externally constrained, independent elements. External constraint suggests the elements of the guage register the degree of variety inherent in the informational environment. Independence of elements suggests each element registers a particular aspect of the environment independent of the other elements which, in turn register other aspects of the environment. Consequently, when the guage is pressed against the outline of an object, the outline of the object is accurately registered. If the object is highly equivocal, the guage registers a high level of equivocality.

Similarly, the leader-as-medium functions with many externally constrained, independent elements. When the leader-as-medium is "pressed against" complex information, the leader needs to possess a large repertoire of responsive actions. The leader-as-medium, therefore is capable of acting differently across a variety of changing conditions. The leader-as-medium acts toward the informational environment with a variety of actions equivalent to the informational equivocality in the environment. Consequently, the interaction of the leader-as-medium will not be characterized by a small repertoire of actions (i.e., specific types of actions). Rather, the interaction of the leader-as-medium will be characterized by

complexity, different actions in different situations and varied actions in an informationally equivocal situation.

Perhaps our failure to understand leadership is directly attributable to looking for leadership in the wrong place---in the leader or specific functions performed by the leader. Perhaps thinking about emergent leadership as a phenomenon of social influence characterized by interactional complexity could enrich our understanding of this phenomenon. The present study proposes to pursue this thinking. More specifically, the present study proposes to pursue the empirical description of naturally occurring emergent leader interaction characteristics embedded in the small, decision-making group context. Interactional characteristics must not only be discovered empirically, but also must be grounded in a useful theoretical structure.

The Interact System Model described by Fisher and Hawes (1971, pp. 444-453) provides a model of group communication based on the propositions of modern system theory. These theorists describe two communication models. First, the Interact System Model suggests communication is always occurring within a social system. Communicative behaviors serve to organize a social system. Order in the system is defined as predictably recurring sequences of interaction. These recurring sequences of interaction are the unit components of the system. Thus sequences of interaction provide the focus of analysis. On the other hand, the Human System Model suggests individual perceptions are the unit-components. Fisher and Hawes argue for discovering relationships between the interact System Model unit-components (interaction patterns) and Human System Model unit-components (member perceptions) in order to inform the search to understand group communication. Applying both models to the present study, discovering relationships between interaction characteristics of group members and individual member perceptions of leadership emergence should lead to informing the search to understand the phenomenon of emergent leadership.

The present study employs the theoretical framework of the Interact System Model and the leader as medium metaphor to focus the search to rediscover the leadership phenomenon on two fundamental research questions:

1. Do the interaction characteristics of emergent leaders differ from the interaction characteristics of nonleaders?
2. Do the interaction characteristics of emergent leaders differ from the interaction characteristics of nonleaders across group history?

Procedures

The purpose of this section is to describe and justify research decisions which influence the degree to which the data of the study adequately represent the phenomenon of emergent leadership. By definition, emergent leadership is that variety of leadership which is earned through face-to-face interaction in the group. Inherent in this definition are two research decisions: the focus of description must be face-to-face interaction; and, the interaction must be embedded in the small group context. The Interact System Model dictates the unit of analysis, the interact. Several other research decisions influence the degree to which the data represent the phenomenon of interest.

Emergent leadership reflects the status hierarchy emerging from group interaction rather than appointed or external hierarchy. Consequently, the external factors influencing status hierarchy should be minimized. The groups examined in this study were initially leaderless zero-history groups. Group members were students enrolled in the basic decision-making group course at a large western university. Assignment of members to groups was random. Thirty-six groups were examined.

Critics have identified task type as a potential source of error and have recommended systematic task analysis (e.g., see Bochner, 1974, pp. 169-178; Hackman, 1968, p. 162). Systematic task analysis for the present study was based on Maier's (1963, pp. 1-9) distinction between decision-making tasks more appropriately performed by individuals, and decision-making tasks more appropriately performed by groups. The groups of the present study performed tasks consistent with Maier's definition of "group task." Each group was instructed to reach consensus decisions on two tasks. Procedures for achieving consensus were discretionary for each group. Two tasks provided the possibility that leadership may change incumbents across group history. Thus, leadership maintenance, as well as initial

emergence, is reflected in the present study. The groups met weekly over the period of one academic term. Total number of meetings per group ranged from five to eleven ($\bar{X}$=8). The duration of each meeting was approximately 50 minutes.

The present study employed member's self reports of perceptions to identify leaders. At the conclusion of each meeting every group member responded to a diary form, including an item which asked each member to rate every other member on a continuum of status hierarchy ranging from "clearly a leader" to "clearly a nonleader." "Emergent leader" was operationalized as that group member identified as "clearly a leader" by all members or by all but one member during the final group meeting. Inclusion of "all but one member" accommodated potential cases of opinion deviates or members who were reluctant to name themselves as leader.

Group communication for each meeting was recorded on audiotapes to provide a semipermanent record for analysis. Interaction from the audiotapes was coded into two interaction analysis systems representing both content and relationship dimensions of communication. The author coded the content dimension using the categories of the Social Information Processing Analysis (SIPA) system. SIPA (see Fisher, Drecksel & Werbel, 1978) contains four dimensions whose categories of behavioral acts are mutually exclusive and exhaustive within each dimension.

Dimension I (SIPA I):
Source of Information
1. Individual
2. Group-system
3. Environment

Dimension II (SIPA II):
Time Orientation
1. Past-to-Present
2. Present-to-Present
3. Future-to-Present
4. Timeless Present

Dimension III (SIPA III):
Evolution of Information
1. Enactment
2. Positive Selection
3. Negative Selection
4. Retention

Dimension IV (SIPA IV)
Information Equivocality
1. Maximum Reduction of Equivocality
2. Moderate Reduction of Equivocality
3. Maintenance of Equivocality
4. Moderate Increase of Equivocality
5. Maximum Increase of Equivocality

Reliability (Guetzkow, 1950, pp. 47-50) among three pairs of raters for SIPA ranges from .8564 to .8708 for Source of Information (SIPA I), .8209 to .8364 for Time Orientation (SIPA II), .7459 to .7684 for Evolution of Information (SIPA III), and .8004 to .8168 for

Information Equivocality (SIPA IV). A copy of the SIPA coding manual is available from the author upon request.

The author coded the relationship dimension using the categories of RELCOM. RELCOM reflects control modes (states of relationship definition). Several studies have demonstrated the utility of empirically examining relational interaction using this interaction analysis system (e.g., see Fisher & Drecksel, 1983; Fisher & Werbel, 1979).

RELCOM: Control Modes

1. Dominance (↑+)
2. Structuring (↑-)
3. Equivalence (→)
4. Deference (↓-)
5. Submissiveness (↓+)

Reliability (Guetzkow, 1950, pp. 47-50) among three pairs of raters for RELCOM ranges from .8649 to .8243. A copy of the RELCOM coding manual is available from the author upon request.

The coded data were analyzed by a computer program designed specifically for interaction data. This program generates finite Markov chains from the continuous stream of coded interaction and generates interaction matrices for the entire group as well as for each possible pair of members within each group. This procedure generates frequencies for each coded function at the interact level, thus describing how often each possible pair of codes appears contiguously, and computes transitional probabilities for each state following each state.

The computer program generated interact matrices for all possible dyads in each group of the study and for each of the 5 coded category systems of interaction analysis. Possible dyads comprised every group member as either antecedent or subsequent speaker with every other member of the group. The computer program then compared the interaction of each dyad against the overall group interaction. A homogeneity test was used to determine whether the dyad

generated communication sequences not typical (that is, idiosyncratic) of the communication in the group as a whole (Kullback, Kupperman & Ku, 1962). The significance level was .05.

The cells of each statistically significant interaction matrix were tested using Gottman and Bakeman's (1978) z-score (cv=± 1.96). These tests identified the interacts which characterized the interaction of the particular dyad.

Results

Of the 36 groups available for study, 18 met the criterion for leadership emergence. These groups comprised different varieties of leadership emergence as identified by paper-and-pencil records. These records provided a description of leadership emergence as a process occurring over extended group history and characterized by the principle of equifinality. Each group reached the same final state: leadership was identified at the final group meeting. This state was reached from different initial conditions for each group: group membership was achieved by random assignment, there was no experimental manipulation, and external constraints were minimal. Emergent leadership undoubtedly evolved in different ways across the history of the 18 groups: the patterns of leadership emergence comprised three general varieties or sets of groups. The patterns of leadership emergence differed across the history of these sets (see Table 1).

Leadership Emergence Set I comprised 8 groups in which a single member was identified as leader. The leadership continuity of these groups indicates unchanging status hierarchy across group history and little contention among members for the leadership role. The status hierarchy of these groups did not change incumbents. Leadership Emergence Set II comprised 9 groups characterized by leadership contention and changing status hierarchies across group history. Leadership contenders comprised those group members identified as leader at some point in group history, but not identified as leader during the final group meeting. Leadership Emergence Set III comprised only 1 group characterized by shared leadership across group history. That is, no single member emerged as the group's perceived leader, and the group status hierarchy did not change incumbents across group history. Rather, the same 2 members were identified as leader at the same meetings and no other member was ever identified as leader.

The interaction occurring in the 18 emergent leadership groups was coded from the tapes and subjected to statistical analysis. Groups with more than 3 unusable tape recorded meetings (i.e., missing or inaudible taped records) were not included in the final analysis. Three groups were excluded from the final analysis by this criterion. The unit of analysis was one uninterrupted utterance. A total of 50,131 utterances occurring during more than 100 hours of group interaction were coded. Five codes were assigned to each utterance (i.e., 4 content codes and 1 relationship code) resulting in 250,655 separate codes available for analysis.

The computer program examined all possible dyadic matrices. Of these matrices 666 demonstrated statistical significance. These 666 matrices provided the basis of analysis. The data identified in these matrices were organized into 2 sets for further analysis: (1) idiosyncratic interaction which occurred in leader-follower dyads, and (2) idiosyncratic interaction which occurred in nonleader-nonleader dyads. The 2 sets of aggregate data were than compared. From expectations based on randomness, leader-follower interaction might be expected to account for 40% (8 of 20 possible dyads) of all dyadic interaction and all remaining dyads might be expected to account for 60% (12 of 20 possible dyads) of all dyadic interaction in five-member groups. For six-member groups leader-follower interaction should randomly account for 33% (10 of 30 dyads) of the significant dyadic interaction, and for seven-member groups leader-follower interaction would be expected to include 29% (12 of 42 dyads).

Leader-follower dyads accounted for 191 of the 365 (52%) significant composite analysis interaction matrices and nonleader-nonleader dyads accounted for 173 of these matrices. In the analysis of each meeting's interaction, leader-follower dyads accounted for 190 of the 302 (63%) significant interaction matrices and nonleader-nonleader dyads accounted for 112 of these matrices.

The statistically significant data were then reorganized to further compare the dyadic interaction of leaders and nonleaders. This analysis compared the overall idiosyncratic interaction of each member of a specific group with the overall idiosyncratic interaction of

the other members of that group. This analysis differed from the foregoing analysis in the sense that the expected frequency of participation was the same for each member within the relevant group. The purpose of this analysis was to identify that member within each group whose interaction was characterized by the highest frequency of participation in idiosyncratic interaction, distributed across the widest variety of dyadic partners and distributed across the widest variety of communicative functions per dyadic partners. In 7 of the 15 groups, the composite interaction of the emergent leader was characterized by the greatest number of these 3 elements. In 2 of the 15 groups an emergent leader and a nonleader shared these characteristics. In 2 of the 15 groups the interaction of a leadership contender was so characterized. In 4 of the 15 groups the composite interaction of a nonleader was characterized by the greatest number of these elements.

In 12 of the 15 groups the meeting-by-meeting interaction of the emergent leader was characterized by the greatest number of these 3 elements. In only 3 of the 15 groups was the interaction of some member other than the emergent leader so characterized. In 2 of these 3 groups that member was a leadership contender and the remaining exception was the shared leadership group.

A review of the traditional emergent leadership literature suggested emergent leader interaction may be characterized by a preponderance of specific communicative functions. The interaction data, therefore, were analyzed further to discover the nature of emergent leader participation within the 5 coded communicative functions. To accomplish this analysis, the cells of each significant composite interaction matrix were tested for significance. These tests identified the specific forms of interaction which characterized the idiosyncratic interaction data of the study. The resulting data were then reorganized to compare the idiosyncratic interaction forms which characterized leader-follower dyads to those of nonleader-nonleader dyads. The results of these analyses are summarized in Table 2.

The z-tests identified two basic forms of idiosyncratic interaction. The first form comprised matrices which were characterized by interaction with no apparent structure. That is, the dyadic interaction in these matrices was idiosyncratic in the sense that the cells of these matrices did not offer significantly from zero-order expectations. One plausible

explanation of this result is that the overall group interaction was characterized by a specific structure, but the interaction identified in the specific matrix was not. Of the 364 significant composite interaction matrices, 166 were characterized by random structure. Leader-follower dyads accounted for 64 of these matrices (33.5% of all leader-follower idiosyncratic matrices) and nonleader-nonleader dyads accounted for 102 of these matrices (58.9% of all nonleader-nonleader idiosyncratic matrices).

The second basic form of idiosyncratic interaction comprised matrices which were characterized by identifiable structure (i.e., sequentiality of informational or relational states). Of the 364 significant composite interaction matrices, 198 were characterized by structured interaction. Leader-follower dyads accounted for 127 of these matrices (66.4% of all leader-follower idiosyncratic matrices) and nonleader-nonleader dyads accounted for 71 of these matrices (41% of all nonleader-nonleader idiosyncratic matrices).

The z-scores identified a total of 559 matrix cells which were characterized by structure. These cells comprised two forms of structured idiosyncratic interaction. The first form was identified by a positive z-score, indicating an interaction sequence which was greater than expected from the distribution of independent (zero-order) acts. A total of 270 interact cells were identified by a positive z-score. Leader-follower dyads accounted for 187 of these interaction patterns and nonleader-nonleader dyads accounted for 83 of these patterns. Further, 251 of these 270 interaction patterns were characterized by similar states of information (see Table 3). One example of these patterns was brainstorming or concatenous statements which introduce new information without critical analysis of that information.

The second form of structured interaction was identified by a negative z-score, indicating less than expected frequency of an interaction pattern which would have been expected from the distribution of independent acts. That is, a negative z-score indicated the avoidance of an interact which would have been expected to occur in the dyad whose interaction differed significantly from the group interaction.

A total of 289 interact cells were identified by a negative z-score. Leader-follower dyads accounted for 201 of these interaction patterns and nonleader-nonleader dyads accounted

for 88 of these patterns. Further, 286 of these patterns were characterized by the avoidance of dissimilar states of information (see Table 4). One example of these avoided patterns was concatenous pairs of statements which cycled from the introduction of new information to evidence favoring the selection of that information.

The data were then analyzed to identify the idiosyncratic interaction which characterized emergent leader interaction within each group of the study. Leader-follower dyads in 13 of the 15 groups participated in structured idiosyncratic interaction more frequently than might be expected within the particular group; whereas nonleader-nonleader dyads in 1 of the 15 groups participated more frequently than might be expected.

A further analysis also examined the nature of idiosyncratic interaction including the 5 sets of communicative functions. The specific interaction forms which described each leader-follower dyad were compared to those of all other leader-follower dyads in the relevant group. No similarities were identified in any of the 15 groups. In other words, the specific forms of idiosyncratic interaction which characterized each emergent leader within the particular group were different from dyadic partner to dyadic partner.

Finally, the characteristic interactions of the emergent leader of each group, including the 5 functions, were described. These descriptions for each emergent leader were compared to the descriptions of other leaders. No similarities were apparent. In other words, the characteristic idiosyncratic interaction of each emergent leader, including all 5 functions, appeared to differ from group to group.

The second research question guiding the study sought to trace the interactional characteristics of leaders and nonleaders during the evolution of group history. Determining changes or consistencies in interaction sequences of leaders and nonleaders required a closer examination of the interaction data from each of the group meetings. The meeting-by-meeting data were organized approximately into thirds to represent 3 time periods (earlier group history, middle group history and later group history). Table 5 describes the organization of this data per time period, and Table 6 summarizes the distribution of the data across the time periods.

A total of 302 idiosyncratic interaction matrices were identified in the meeting-by-meeting analysis. During earlier group history, 75 matrices were identified. Leader-follower dyads accounted for 47 of these matrices (63%), and nonleader-nonleader dyads accounted for 28 of the matrices. During middle group history, 118 matrices were identified. Leader-follower dyads accounted for 70 of these matrices (59%) and nonleader-nonleader dyads accounted for 48 of the matrices. During later group history, 109 matrices were identified. Leader-follower dyads accounted for 73 of these matrices (67%) and nonleader-nonleader dyads accounted for 36 of the matrices.

The distribution of idiosyncratic interaction across the 3 time periods in groups which identified only one member as leader across group history (i.e., Leadership Emergence Set I) was then compared to the distribution of this interaction in groups which were characterized by multiple leaders contending for the leadership role (i.e., Leadership Emergence Set II) and the group which was characterized by shared leadership (i.e., Leadership Emergence Set III). In 4 of the 6 Leadership Emergence Set I groups, only leader-follower dyads exhibited idiosyncratic interaction during earlier group history; whereas in 4 of the 8 Leadership Emergence Set II groups nonleader-nonleader participation in idiosyncratic interaction during earlier group history was equivalent or greater than leader-follower participation.

During the middle stage of group development, leader-follower dyads in each of the 6 Set I groups participated in idiosyncratic interaction more frequently than expected and with greater frequency than nonleaders; whereas in 5 of the 8 Set II groups the interaction patterns between nonleaders was equivalent or greater than the participation of leader-follower dyads. During later group history, leader-follower dyads in all of the Set I groups exhibited nearly all the idiosyncratic dyadic interaction found in these 6 groups. During this same time period, leader-follower dyads in 5 of the 8 Set II groups exhibited the bulk of the idiosyncratic interaction (much more frequently than might be expected from random expectations). However, nonleader-nonleader dyads in the other 3 Set II groups exhibited more idiosyncratic interaction than did leader-follower dyads. The leader-follower dyads in the shared leadership group accounted for the only idiosyncratic interaction which occurred

during earlier and middle group history and no dyads participated in interaction which differed significantly from the overall group interaction during later group history.

A review of the literature suggested the specific functions which characterize emergent leader interaction might change across group history. The meeting-by-meeting interaction data of the present study, therefore, were further analyzed to discover the stability or change of participation in the 5 sets of communicative functions across time periods. Because the number of interacts within each of the statistically significant matrices was too limited to test for further significance, analysis was restricted to the 5 sets of communicative functions and does not include specific interacts. Tables 7-9 summarize this data.

Leader-follower participation in each of the 5 communicative functions was compared to nonleader-nonleader participation in each function. Each time period was examined separately. Results of this analysis suggested leader-follower dyads tended to participate more frequently than might be expected in each of the functions during each time period, whereas nonleader-nonleader dyads tended to participate less frequently than might be expected. Further, the specific combination of communicative functions characterizing leader-follower dyads tended to differ from those of nonleader-nonleader dyads within the relevant group during each of the time periods. The specific combination of communicative functions which characterized each emergent leader during each time period, however, tended to differ from group to group. During no time period was the interaction of more than 4 emergent leaders similar.

Discussion

The results of the data analysis suggest emergent leader interaction tends to differ from nonleader interaction and tends to differ from nonleader interaction across group history. Further, the results of the data analysis identified a variety of forms of leadership emergence and a variety of emergent leader interaction characteristics. The following list summarizes the conclusions which illuminate the nature of this variety and the nature of these differences.

1. Leadership emergence appears to be a process occurring over extended group history and

characterized by the principle of equifinality. Leadership emergence appears to be characterized by several varieties of leadership development, including uncontended, contended and shared leadership emergence.

2. Emergent leader interaction appears to be idiosyncratic or distinctive from the overall group interaction, whereas nonleader interaction appears to be similar to the overall group interaction. Further, the emergent leader appears to be that group member who distributes participation in idiosyncratic interaction across the widest variety of dyadic partners.

3. Nonleader interaction does not appear to be characterized by identifiable idiosyncratic interacts (i.e., structured idiosyncratic interaction); whereas emergent leader interaction does. Further, emergent leader dyadic interaction appears to be generally characterized by similar states of information and by the avoidance of dissimilar states of information.

4. Emergent leaders appear to distribute participation in idiosyncratic interaction across the time periods of group development in a pattern different from that of nonleaders within each group. This difference of distribution is reflected in the frequency of participation as well as the particular combination of communicative functions. Perhaps these differences in timing and nature of participation reflect the changing informational and relational needs of each particular group, and emergent leaders' participation tends to coincide with these changing needs whereas nonleaders' participation does not.

5. In addition, the interaction characteristics of emergent leaders and nonleaders in the 3 leadership emergence groups appear to differ somewhat from one another across group history. Emergent leaders in uncontended and shared leadership groups tend to participate in the only idiosyncratic interaction which occurs in their particular group during earlier group history and to participate in the only or the bulk of the idiosyncratic interaction which occurs during middle and later group history. On the other hand, leaders and nonleaders in contended leadership groups distribute frequency of participation in idiosyncratic interaction sporadically across the 3 time periods of group development.

6. Emergent leader interaction appears to be distinctive from the overall group interaction. Emergent leader interaction appears to be distinctive from nonleader interaction. The interaction of each emergent leader appears to be distinctive from the interaction of all other emergent leaders. Emergent leader interaction appears to be distinctive from dyad to dyad within each group. Emergent leader interaction within each group appears to be distinctive from earlier to middle to later group history.

In summary, emergent leader interaction appears to differ from nonleader interaction and appears to differ from nonleader interaction across group history. The nature of emergent leader interaction, however, tends to vary from leader to leader and from dyad to dyad. Apparently no combination of specific behaviors characterizes emergent leader interaction and no combination of specific behaviors characterize emergent leader interaction across group history.

This conclusion differs dramatically from the traditional claims of emergent leadership research. Traditionally leadership research reveals a preponderance of one or a few traits, styles, functions or contingencies which characterize leadership emergence. The analyses of the data of the present study, however, revealed no such preponderance of behavior. In fact, no matter what criterion was applied, leader interaction appeared to be characterized by complexity---variety, diversity and distinctiveness.

Clearly Weick's leader-as-medium metaphor illuminates and is supported by the results of the present study. No preponderance of specific actions emerged from the emergent leader interaction analysis. Rather, the interaction of emergent leaders varied not only across functions and across group meetings, but also from group to group and from dyad to dyad within each group. Moreover, within each group the emergent leader was that group member who displayed the most complex interaction across a variety of criteria. Further, each emergent leader apparently displayed a different level of complexity (probably corresponding to the level of informational equivocality in each group) as well as a different pattern of participation in complex interaction. The implication is, the interactional complexity of each emergent leader reflected the complexity (the degree of informational equivocality)

evident in the particular group system. Conversely, the interaction of nonleaders tended not to register this complexity, but rather to assimilate diverse informational elements and to act similarly toward them.

Fisher (1984, in press) not only recommends the leader-as-medium metaphor as a useful approach to understanding the leadership phenomenon, but also clarifies and expands the metaphor by focusing in detail on the properties of a good medium. The following discussion attempts to include both Weick's and Fisher's explanations of a good medium as they illuminate the results of the present study.

First, the leader-as-medium displays many elements. Elements may include interpretations, observations, beliefs, functions, views and so forth. The more varied these elements, the better the medium. The law of requisite variety states, "the variety within the system must be at least as great as the environmental variety against which it is attempting to regulate itself" (Buckley, 1968, p. 495). Consequently, a leader-as-medium tends to employ a variety of information processing behaviors at least as great as the variety of elements in the group's informational environment.

The leader-as-medium metaphor suggests a leader is that group member who develops a repertoire of actions or a wide variety of communication functions rather than a preponderance of some specific function or set of functions designated as "leadership." The leader develops a repertoire of actions across a range of dyadic partners and topics of discussion. The leader develops a repertoire of functions with each dyadic partner and selects widely from that repertoire across the range of interactional history. All elements (the repertoire of communicative functions, the interactional partners, and the developmental stages of group history) are sources of complexity. The leader is the member who responds to those sources of complexity with an equivalently complex range of interactional behaviors.

Second, the leader-as-medium displays independence of elements. This property of the leader depicts a person with suspended judgment able to resist hasty interpretations and premature evaluations and whose perceptions are not readily governed by past experiences and beliefs. This property indicates a varied and loosely connected set of beliefs, attitudes,

interpretations, views and so forth. The more varied and loosely connected these elements, the better the medium. Consequently, a leader (a good medium) tends to employ a variety of beliefs, interpretations, and viewpoints independently in the group in order to register the number of interpretations present in the information during group interactions. On the other hand, a nonleader (a poor medium) tends to think critically, to employ a tightly connected set of perceptions, beliefs, interpretations and viewpoints. The nonleader is uncomfortable with complexity and seeks parsimony. Ambiguity is intolerable so that new information is quickly interpreted and evaluated. This explanation does not necessarily suggest the leader-as-medium agrees with all beliefs, interpretations, views and so forth. This explanation suggests, instead, that the leader-as-medium is not uncomfortable with complexity and maintains ambiguity for a longer period through enacting a wide variety of beliefs, views and interpretations. The leader-as-medium thus succeeds in maintaining a wide range of information and potential interpretations available for processing through continued group interaction.

Third, a leader-as-medium displays an external rather than internal constraint of elements. This property indicates the leader-as-medium makes observations or interpretations on the basis of contextual events or information received rather than on the basis of personal beliefs or perceptions. Consequently, a leader tends to register information in the group environment as it emerges in the ongoing context, rather than prematurely imposing internal constraints such as commitment, need satisfaction, and desired rewards upon the information before it even is registered or considered by the group. Conversely, a nonleader (a poor medium) tends to impose a certain view of the situation or a desired outcome on information registration. The nonleader is thus quick to render judgment on new information. The leader suspends personal judgment and allows subsequent events to intervene.

External constraint is accomplished through enhanced enactment processes. According to Weick and Fisher, the concept of enactment processes suggests humans do not so much "discover" the reality of things and events as they impose or create these realities. The concept of enactment processes enables us to understand the leader-as-medium as that group

member who facilitates group information processing through enactment processes. The leader-as-medium is first acting toward information---first accurately registering information. In this sense the leader resists the normal tendencies to allow beliefs to guide interpretation of experience or to allow experiences to dictate beliefs. The leader-as-medium creates both belief and experience by first acting toward new information.

Weick (1977) further illuminates the function of enhanced enactment processes which the leader-as-medium provides to the group system.

> The importance of control from an enactment perspective lies in the fact that to control something is to take actions with respect to it. These actions become the raw materials from which a sense of the situation is eventually built. The controlling actions are what the organization [or group] examines retrospectively to see what it is up to (p. 272).

The principle characteristic of the interaction of the emergent leaders in the present study appears to be enhanced enactment processes. These leaders appear to act toward or participate in registering the variety and diversity of the information presented in the group before they interpret or make sense of it through the group's information-processing system, their interaction. This enhanced registration of more information maintains the degree of informational complexity available to the particular group system. This action apparently provides the "raw materials" required by the particular group for retrospective sensemaking and evaluation of that interaction. On the other hand, nonleaders appear to simplify their actions by acting toward or registering the information in the group's environment in an habitual, similar (one might say "more typical predictable") fashion.

Enhanced enactment processes do not preclude critical analysis of information. Instead, the implication is that all group members, including the leader, eventually evaluate and select their options (i.e., reach a decision through consensus). But the critical analysis is retrospective; it comes later in the social information processing system. A good medium avoids the problem of premature evaluation and allows the group to keep their options open. The function of the leader during periods of retrospective sensemaking is probably similar to the function of all group members.

In summary, the present study describes the characteristics which distinguish leader

interaction from nonleader interaction by focusing on the interdependence of group member communication, rather than isolated leader behavior. This interdependence reflects the leader's participation as both antecedent and subsequent speaker. The interaction of emergent leaders appears to be characterized by complexity. Complexity does not imply merely a multivariate process, but indicates the central feature of the leader's interactional functions. This complexity reflects the qualities of a good medium; enhanced enactment processes which register more accurately the variety of "raw materials" required by the group information processing system for retrospective sensemaking.

Limitations

As with all research, there are limitations to the generalizability and applicability of the present study. First, the present study selected 5 sets of communicative functions. The exploration of other communicative functions particularly in the relationship dimension, might provide additional insight into the emergent leadership phenomenon. The developmental stages of social penetration, as described by Altman and Taylor (1973), Knapp (1978), Baxter (1983) and others suggest some possible relationship functions to explore.

Second, the present study related only group member perceptions of leadership identification to emergent leader interaction characteristics. Future research might explore additional Human System Model components. For example, future research might explore the relationship between group member perceptions of argumentativeness, extroversion, or sociometric roles and emergent leader interaction characteristics.

Third, a single shared leadership group was available for analysis in the present study. Consequently, comparison of emergent leader interaction characteristics in shared leadership emergence groups and other varieties of leadership emergence groups was limited. Additional interaction data from shared leadership emergence groups is needed to describe this phenomenon more fully. One foreseeable problem is finding groups with shared leadership for analysis. Such groups may be quite rare.

Fourth, the present study provided justifications for the research decisions which influenced the generalizability of the research results. This generalizability, however,

remains to be tested. Business, governmental and industrial organizations which employ matrix structures might provide analogous contexts in which to test this generalizability. Fifth, exploring the differences and similarities of interaction occurring in groups with leadership emergence and groups with no leadership emergence may provide further insight into the leadership phenomenon.

In conclusion, theorists, researchers and practitioners have long been engaged in the search to understand the leadership phenomenon. Many leadership scholars have lamented the state of the art and have issued a challenge to researchers to rediscover the leadership phenomenon. Such a rediscovery is an ambitious effort. Much remains to be discovered. The present study, it is hoped, contributes in some measure to this effort.

Table 1

Leadership Identification: Leadership Emergence

Set#	Group#	Group Meetings										
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11
I	1				1	1	1	1	*	*	*	*
	5	1			1	1	1	1	*	*	*	*
	6								1	*	*	*
	9	1			1	1	1		1	*	*	*
	11	1	1				1	*	*	*	*	*
	12		1				1	*	*	*	*	*
	13				1	1	1	1	*	*	*	*
	18	1		1		1	*	*	*	*	*	*
II	2	6	6		1				1		1	*
	3							2	1	*	*	*
	4		5	5	6			1	1	*	*	*
	7			1&5		1				1	*	*
	8				1		1	1	1	1&3	1	*
	10		1&3	1	1&2	1&2	1&2	1			1	1
	14	2	2	2	1&2	2	2			1	*	*
	15	2&3				1	1				1&5	1
	16	1&2					2	1	1	*	*	*
III	17				1&2	1&2	1&2	1&2	*	*	*	*

The number in the cells indicates the specific member who was identified as leader at the conclusion of that meeting.

*= No meeting held.

Table 2

Summary of Composite Analysis Idiosyncratic Interaction: Matrices and Interact Forms*

Description	Leader-Follower Dyads	Nonleader-Nonleader Dyads
Total # of Idiosyncratic Matrices	191	173
Matrices Characterized by Random Structure	64	102
Matrices Characterized by Structure	127	71
Total # of Structured Matrix Cells	388	171
Interact Forms (Matrix Cells) Identified by Positive z-score	187	83
Interact Forms Identified by Positive z-score and Characterized by Similar States of Information & Relationship	174	77
Interact Forms (Matrix Cells) Identified by Negative z-score	201	88
Interact Forms Identified by Negative z-score and Characterized by Avoidance of Dissimilar States of Information & Relationship	199	87

*= A copy of the data represented by this summary (including specific group, dyad, significant matrices and interact forms) is available from the author upon request. Further, a copy of the SIPA and RELCOM coding manuals is available from the author upon request.

Table 3

Composite Analysis Idiosyncratic Interaction Forms: Samples of Similar States

Dimension	Possible States of Information	Statistically Significant Interacts	Example Statements
SIPA I (Source of Information)	1. Individual 2. Group-System 3. Environment	+2-2	Statement A: You're the one who wanted to talk about MX. Statement B: But you just said there isn't time.
		+3-3	Statement A: Didn't Congress vote against the race track mode or Whatever that is? Statement B: Yeh, this magazine... see, right here..it says, here, you read it.
SIPA II (Time Orientation)	1. Past-to-Present 2. Present-to-Present 3. Future-to-Present 4. Timeless Present	+4-4	Statement A: I'm always late on Mondays so I won't be on time. Statement B: That's life.
		+3-3	Statement A: Let's meet at least one more time before the deadline. Statement B: Everybody better show up
SIPA III (Evolution of Information)	1. Enactment 2. Positive Selection 3. Negative Selection 4. Retention	+1-1	Statement A: We could propose a merger. Statement B: Or smaller autonomous units.
		+2-2	Statement A: Yah, General Dynamics tried that and really skyrocketed. Statement B: And they're not the only ...some company back east did that and their stock went way up.

Table 4

Composite Analysis Idiosyncratic Interaction Forms: Samples of Dissimilar States

Dimension	Possible States of Information	Statistically Significant Interacts	Example Statements
SIPA I (Source of Information)	1. Individual 2. Group-System 3. Environment	-2-3	Statement A: We could finish this today if we want. Statement B: Two groups turned theirs in class last week. Were there?
		-3-2	Statement A: So President Carter says something about Amy told him about nuclear bombs, like ya know... Statement B: Should we use that in our report?
SIPA II (Time Orientation)	1. Past-to-Present 2. Present-to-Present 3. Future-to-Present 4. Timeless Present	-3-4	Statement A: How are we going to organize this? Statement B: All reports look alike ...see one you've seen 'em all.
		-4-3	Statement A: All reports look alike ...see one you've seen 'em all. Statement B: Well, this one's going t' be different.
		-4-1	Statement A: Why are you going to preregister...nobody ever gets the classes they want. Statement B: I got every one last quarter.
SIPA III (Evolution of Information)	1. Enactment 2. Positive Selection 3. Negative Selection 4. Retention	-1-2	Statement A: We could make a graph to show what we did. Statement B: Great. He's really into visual aids.
		-2-1	Statement A: There are lots a statistics we could use t' prove it...like acid rain and... Statement B: Where are you going for vacation?

Table 5

Group Meetings Representing
3 Periods of Group History

Total # of Group Meetings	# of Groups	# of Meetings Representing Early Group History	# of Meetings Representing Middle Group History	# of Meetings Representing Later Group History
6	2	2	2	2
7	4	2	3	2
8	4	3	2	3
9	2	3	3	3
10	2	3	4	3
11	1	4	3	4

Table 6

Leader-Follower and Nonleader-Nonleader
Idiosyncratic Interaction:
Frequency of Participation
Across Group History

Leadership Emergence Set #	Group #	# of Group Members	Number of Dyadic Interaction Matrices Found to be Significant					
			Earlier Group History (N=75)		Middle Group History (N=118)		Later Group History (N=109)	
			L-F (N=47)	N-N (N=28)	L-F (N=70)	N-N (N=48)	L-F (N=73)	N-N (N=36)
I								
	1	6	0	0	8	2	8	5
	5	6	3	0	2	1	3	1
	6	5	0	0	4	2	2	1
	9	6	8	0	1	0	7	0
	11	5	2	0	6	2	12	1
	12	6	2	0	2	0	1	1
II								
	2	6	4	8	13	15	10	2
	3	7	8	4	2	3	1	4
	4	6	2	4	3	6	13	0
	7	6	1	1	6	3	3	1
	8	5	4	0	2	4	4	0
	14	6	5	4	6	2	0	9
	15	6	5	1	4	5	5	4
	16	6	1	6	7	3	4	7
III								
	17	6	2	0	4	0	0	0

Table 7

Leader-Follower and Nonleader-Nonleader Participation in Communicative Functions: Earlier Group History

Leadership Emergence Set #	Group #	Leader-Follower Participation in Communicative Functions					Nonleader-Nonleader Participation in Communicative Functions				
		SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM	SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM
I											
	1	0	0	0	0	0	0	0	0	0	0
	5	2	1	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0
	9	3	3	2	0	0	0	0	0	0	0
	11	1	0	1	0	0	0	0	0	0	0
	12	1	0	1	0	0	0	0	0	0	0
II											
	2	1	1	2	0	0	2	1	4	0	1
	3	2	4	1	0	1	3	1	0	0	0
	4	0	0	2	0	0	0	1	2	1	0
	7	0	0	1	0	0	1	0	0	0	0
	8	2	0	2	0	0	0	0	0	0	0
	14	2	0	2	1	0	2	2	0	0	0
	15	2	3	0	0	0	1	0	0	0	0
	16	1	0	0	0	0	1	1	3	1	0
III											
	17	2	0	0	0	0	0	0	0	0	0
Total		19	13	13	1	1	10	6	9	2	1

Number in cell indicates the number of significant matrices identified.

Table 8

Leader-Follower and Nonleader-Nonleader Participation in Communicative Functions: Middle Group History

Leadership Emergence Set #	Group #	Leader-Follower Participation in Communicative Functions					Nonleader-Nonleader Participation in Communicative Functions				
		SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM	SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM
I											
	1	1	6	1	0	0	1	0	1	0	0
	5	1	1	0	0	0	0	0	1	0	0
	6	2	0	2	0	0	1	0	1	0	0
	9	0	1	0	0	0	0	0	0	0	0
	11	1	0	4	1	0	1	1	0	0	0
	12	1	0	1	0	0	0	0	0	0	0
II											
	2	3	8	2	0	0	4	3	7	1	0
	3	0	1	0	1	0	0	0	2	0	1
	4	1	1	1	0	0	1	2	2	0	1
	7	0	2	3	0	1	2	0	1	0	0
	8	1	0	1	0	0	0	0	2	1	1
	14	1	1	3	1	0	2	0	0	0	0
	15	2	1	1	0	0	0	1	1	1	2
	16	2	3	2	0	0	0	3	0	0	0
III											
	17	2	0	2	0	0	0	0	0	0	0
Total		18	25	23	3	1	12	10	18	3	5

Number in cell indicates the number of significant matrices identified.

Table 9

Leader-Follower and Nonleader-Nonleader Participation in Communicative Functions: Later Group History

Leadership Emergence Set #	Group #	Leader-Follower Participation in Communicative Functions					Nonleader-Nonleader Participation in Communicative Functions				
		SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM	SIPA I	SIPA II	SIPA III	SIPA IV	RELCOM
I											
	1	2	1	3	1	1	1	3	1	0	0
	5	1	1	1	0	0	0	0	1	0	0
	6	0	1	1	0	0	1	0	0	0	0
	9	3	2	1	1	0	0	0	0	0	0
	11	4	5	3	0	0	1	0	0	0	0
	12	0	0	1	0	0	1	0	0	0	0
II											
	2	1	4	4	0	1	0	1	1	0	0
	3	0	0	1	0	0	1	2	1	0	0
	4	3	3	5	1	1	0	0	0	0	0
	7	0	1	2	0	0	1	0	0	0	0
	8	1	2	1	0	0	0	0	0	0	0
	14	0	0	0	0	0	3	2	2	0	2
	15	1	2	1	1	0	1	1	1	1	0
	16	1	1	2	0	0	1	3	3	0	0
III											
	17	0	0	0	0	0	0	0	0	0	0
Total		17	23	26	4	3	11	12	10	1	2

Number in cell indicates the number of significant matrices identified.

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